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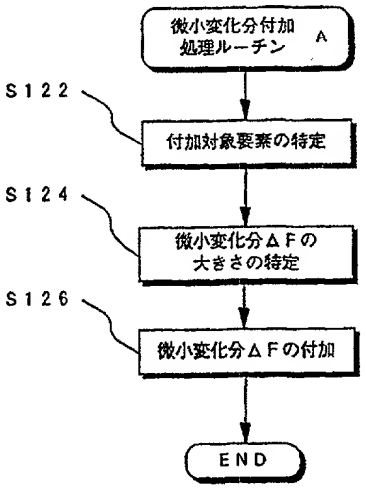
(54)Title: METHOD FOR EMBEDDING ELECTRONIC WATERMARK, RECORDED MEDIUM ON WHICH THE METHOD IS RECORDED, METHOD FOR PROVING EMBEDDED ELECTRONIC WATERMARK, AND DEVICE FOR EMBEDDING ELECTRONIC WATERMARK

(54)発明の名称 電子透かしの埋め込み方法、その方法を記憶した記憶媒体、および埋め込まれた電子透かしの証明方法ならびに電子透かしの埋め込み装置

(57) Abstract

A predetermined element of a matrix F produced by Fourier transform of the original image data P0 is specified (Step S122). An infinitesimal component ΔF of a predetermined size is added to the real part FR or the imaginary part FI of the element (Steps S124, S126). By taking the symmetry of the Fourier spectrum into consideration, the infinitesimal component ΔF is subtracted. A phase difference pattern W01 corresponding to the infinitesimal component ΔF is embedded in the image formed by inverse-transforming the matrix to which the infinitesimal component ΔF is added. The pattern cannot be taken out of the image in which the phase difference pattern is embedded or cannot be erased by an overwrite attack if the original image is concealed. Even if different watermark information is overwritten by a like algorithm on data in which an electronic watermark is embedded, the electronic watermark embedded in the original data can be taken out. A similar processing can be applied to the region obtained by wavelet transformation and comprising low-frequency components.



A ... INFINITESIMAL VARIATION ADDING ROUTINE
S122 ... SPECIFY ELEMENT OF ADDITION OBJECT
S124 ... SPECIFY SIZE OF INFINITESIMAL VARIATION ΔF